

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 to 10 (Cancelled)

11. (Currently Amended) A system for identifying an abnormal temperature in a combustion section of a gas turbine comprising:

an array of temperature sensors arranged in an exhaust passage of the gas turbine, and each temperature sensor outputs a temperature signal indicative of a temperature of combustion gases proximate the sensor;

a computer system including a memory storage device, a processor, an output device, and an input device, wherein the processor is operatively coupled to the storage device, output device and input device;

the memory storage device including information indicative of temperature signals from the temperature sensors, and algorithms for identifying an abnormal combustion gas temperature signal based on the temperature signals, and algorithms for correlating a temperature sensor outputting a temperature signal indicative of the abnormal combustion gas temperature to a location in the combustion section which is experiencing an abnormal combustion gas temperature, wherein said algorithms include a swirl angle algorithm to estimate a swirl angle experience by combustion gases flowing from the combustion section to the temperature sensors, and

the output device providing an indication of the location in the combustion section experiencing the abnormal combustion gas temperature.

12. A system for identifying an abnormal temperature as in claim 11 wherein ~~the algorithms include a swirl angle algorithm to estimate the swirl angle experience by combustion gases flowing from the combustion section to the temperature sensors~~ the swirl angle is indicative of a degree of rotation experienced by the combustion gases flowing from the combustion section to the plurality of positions where exhaust gas temperatures are measured, and wherein the swirl angle is determined based on the at least one linear function.

13. A system for identifying an abnormal temperature ~~as in claim 11~~ in a combustion section of a gas turbine comprising:

an array of temperature sensors arranged in an exhaust passage of the gas turbine, and each temperature sensor outputs a temperature signal indicative of a temperature of combustion gases proximate the sensor;

a computer system including a memory storage device, a processor, an output device, and an input device, wherein the processor is operatively coupled to the storage device, output device and input device;

the memory storage device including information indicative of temperature signals from the temperature sensors, and algorithms for identifying an abnormal combustion gas temperature signal based on the temperature signals, and algorithms for correlating a

temperature sensor outputting a temperature signal indicative of the abnormal combustion gas temperature to a location in the combustion section which is experiencing an abnormal combustion gas temperature, wherein said algorithms include a swirl angle algorithm to estimate the swirl angle experience by combustion gases flowing from the combustion section to the temperature sensors, and

the output device providing an indication of the location in the combustion section experiencing the abnormal combustion gas temperature,

wherein the indication of the location in the combustion section is a polar graph of the combustion section with an indicator at a position on the graph corresponding to the location in the combustion section experiencing the abnormal combustion gas temperature.